DOCUMENT RESUME

ED 145 470 CS 203 695

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TITLE New Forms, New Function: Teaching Children to Generalize Newly-trained Language.
PUB DATE Aug 77
NOTE 19p.; Paper presented at the Annual Meeting of the American Psychological Association (85th, San Francisco, August 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Behavioral Science Research; *Behavior Change; *Contingency Management; Developmental Disabilities; Language Development; Language Handicaps; Language Research; Preschool Education; *Retarded Speech Development; Teaching Techniques; *Verbal Development

ABSTRACT

Rates of verbalizing by three children exhibiting moderate to severe language delays (delays of six months to two years) were increased through the systematic use of mands for verbalization, models for verbalization, and contingent positive consequences following utterances. Daily samples of each child's speech were collected during free play periods in a classroom for language deficient preschool children. In a multiple-baseline design across children, teachers prompted language usage and provided materials and services following request and descriptions. The results of the study showed that children's rates of verbalizations doubled to tripled from their baseline levels when the intervention was introduced. Subjects showed increases in vocabulary and complexity of utterances, as indicated by cumulative rates of novel words and novel word combinations. Generalization of newly trained words and grammatical structures to the classroom was also increased. (Author)

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New Forms, New Function: Teaching Children to Generalize Newly-trained Language

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CS203695

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Abstract

Rates of verbalizing by three children exhibiting moderate to severe language delays (delays of 6 months to 2 years) were increased through the systematic use of mands for verbalizations, models for verbalization, and contingent positive consequences following utterances. Daily samples of each child's speech were collected during freeplay periods in a classroom for language deficient preschool children. In a multiple-baseline design across children, teachers prompted language usage and provided materials and services following requests and descriptions. The results of the study showed that children's rates of verbalizations doubled to tripled from their baseline levels when the intervention was introduced. Subjects showed increases in vocabulary and complexity of utterances, as indicated by cumulative rates of novel words and novel word combinations. Generalization of newly-trained words and grammatical structures to the classroom was also increased.

Although there is a well-developed technology for training language deficient children to produce language in one-to-one sessions (Schiefelbusch, 1975), very little research has explored methods for insuring the generalization of newly-trained language skills to the child's natural environment (e.g., classroom, playground, home). The importance of across-setting generalization cannot be overstated. If no generalization occurs, the practical value of the one-to-one language training is highly questionable. It follows that the usefulness of the one-to-one training may be determined by the extent that children use trained language in everyday interactions. The evidence of minimal generalization suggests there may be a critical need for in-setting generalization programming techniques to insure the overall success of the training program.

In the current experiment, a classroom intervention strategy was employed to encourage generalization of language skills taught in one-to-one training. The experiment was designed to measure the generalization of newly-trained language skills from training to the children's classroom environment, and analyze the effects of a specific teaching strategy on the rates of this generalization.

Three children, two boys and one girl, enrolled in a preschool for language deficient children, and concurrently receiving one-to-one language training, served as subjects. The children ranged in age from 3 yr, 4 months to 4 yr, 6 months at the beginning of the study. One subject exhibited a moderate language delay (6 months to 1 yr behind age level), but demonstrated cognitive and motor skill appropriate for her age. The other two subjects were severely delayed, scoring between 1½ to 2 yr

below age levels on the Peabody Picture Vocabulary, the Denver Developmental Screening Test, and the Houston Test of Language Development.

One 15-min sample of each child's speech was collected daily, Monday through Thursday, during a freeplay period in the preschool classroom. While one observer made a verbatim transcription of the child's utterances, a second observer recorded each occurrence of verbal initiations and responses by the child to both teachers and peers. The same observer recorded instances of teacher questions, instructions, mands for verbalizations, models for verbalizations, as well as each occurrence of praise, corrective feedback or commentary following the child's verbalizations.

In a multiple-baseline design (Baer, Wolf, & Risley, 1968) across children, classroom teachers systematically prompted verbalizations by (1) requiring that children verbalize in order to obtain desired materials and services ("Tell me what you want."), (2) providing models for children to imitate if they were unable to spontaneously produce an appropriate verbalization ("Say 'ball'."), and (3) providing cues for longer or more complex utterances (Teacher wishes child to say "want ball." Teacher: "Say 'w-w-a-a-....."). In addition to prompting, teachers positively consequated children's utterances by providing the requested material or service and descriptive praise ("Great, you said 'Want ball'.").

Reliability assessments were made once each week for each child on both verbatim and rate recordings. Mean reliability for verbatim records (compared morpheme by morpheme) was 87%; reliability for rate measures averaged 89%.

The results of the study showed that for all three subjects, the mand-model-reinforcement procedure increased the rate of verbalizations from double to triple their baseline levels.

Insert Figure 1 about here

In addition to increases in rate, each child showed increases in vocabulary and complexity of utterances, as indicated by changes in cumulative rates of novel words and novel word combinations. Figure 2 shows the cumulative new words during baseline and manding conditions

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Insert Figure 2 about here

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for Bob, Mark, and Sue. Although acquisition rates varied across the three children, depending largely on their initial skill level, a similar trend is seen for all subjects. In Figure 3, cumulative rates

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Insert Figure 3 about here

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of new phrases are shown. From Sue's graph it is evident that she was generating new phrases at a high level during the baseline condition. While the manding intervention may have increased her rate of acquisition, the effect is not as great as it appears to have been for Bob and Mark. For all three subjects, the rate of new phrases and new words increased as the intervention condition continued.

To determine if the manding procedure effected the children's rates of generalization from training to the classroom, records of trained structures were compared with the verbatim samples collected in the classroom. For Mark, a comparison was made for specific nouns. In Figure 4, the circles represent nouns trained and the triangles the

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Insert Figure 4 about here

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nouns used by Mark in the classroom. With the introduction of the manding procedure, a marked increase in generalized usage of nouns was observed. In determining generalization for Bob (Figure 5), a slightly broader definition was used. Bob had been trained on examples of five different grammatical structures which have been subsumed under the class Nominal- (noun or pronoun) Verb-(optional article) Nominal (noun or pronoun). Included in his training were sentences such as: boy sit chair, she runs house, I like cookies, car hits it, she has cup. Generalization was defined as any instance of the broad class Nominal -Verb- (optional article) -Nominal. To be considered a generalized instance, a sentence need not be identical to the ones trained. This allowed for recombinations of trained elements into structures which were not directly trained but were possible examples of the trained structures. A clear effect of the manding procedure can be seen in Figure 5. Following the intervention, Bob generalized four times as

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Insert Figure 5 about here

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many examples as he had during the baseline condition. (An average of .5 structures per day generalized during baseline, while an average of 2.0 structures were generalized each day during the intervention.)

Sue's generalization is shown in Figure 6. A similarly broad

Insert Figure 6 about here

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definition of generalization was used in evaluating Sue's data. Sue had shown considerable generalization during the baseline; however, the introduction of the manding procedure produced a small increase in the level of generalization. During baseline, Sue had generalized 5.8 new structures each day; during the intervention, she averaged 8.2 new structures.

The results of this study suggest that the generalization of skills from one-to-one language training to a child's classroom environment may be facilitated by the use of a teaching strategy aimed at increasing the rate of child verbalizations. The study replicates the findings of Hart and Risley (1975) with a more severely language deficient population, again demonstrating that increases in rate may be achieved by prompting and consequating children's verbalizations using an incidental type teaching procedure. Finally, the results suggest that the display of new vocabulary and new combinations of words, may be brought about by an intervention to increase rate. Thus, the intervention strategy served three purposes: it (1) increased the frequency of talking by children who seldom interacted verbally; (2) prompted and supported the children's use of newly-learned forms; and (3) provided opportunities for children to learn and use additional vocabulary and grammatical structures.

The success of an intervention of this type suggests that adult behavior may be an important ecological variable in children's generalization of new language skills. Adults set the occasion for language and reinforce its display both verbally and nonverbally. Typical levels of teacher prompts and reinforcement (such as those observed during baseline conditions) may not be sufficient for the language learning child. Interventions which increase the rate of these supportive behaviors by altering the child's verbal environment may be both useful and necessary.

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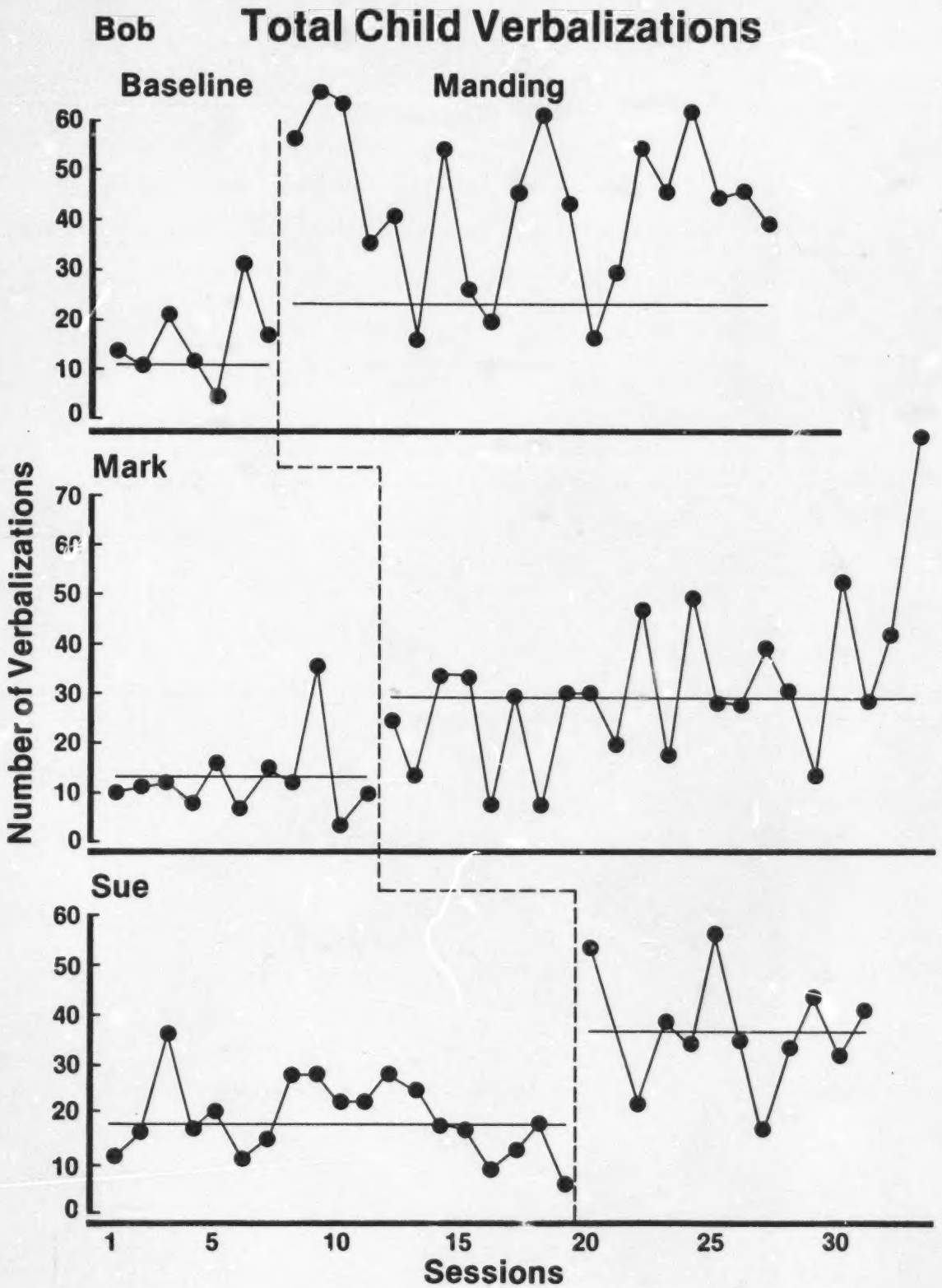
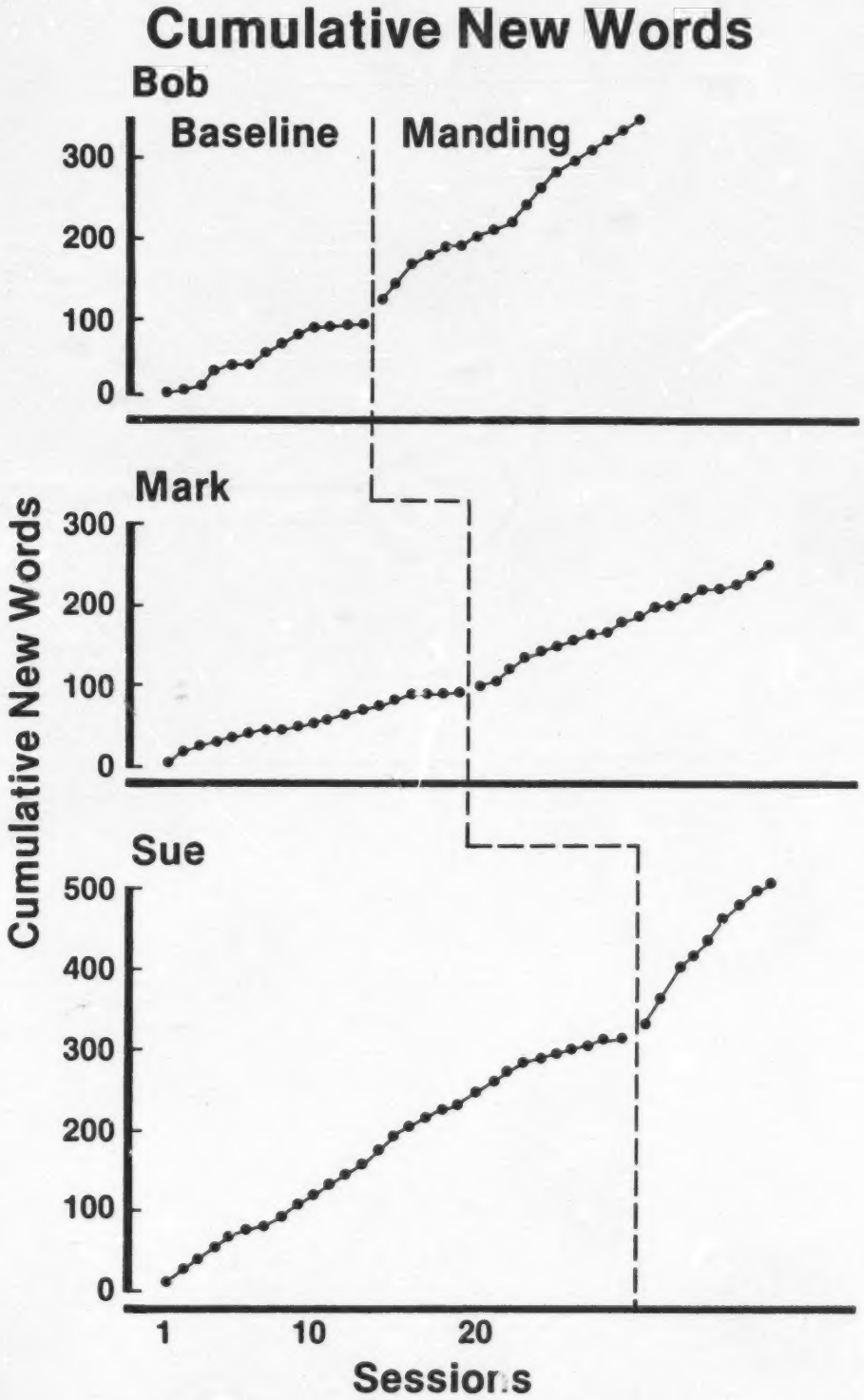
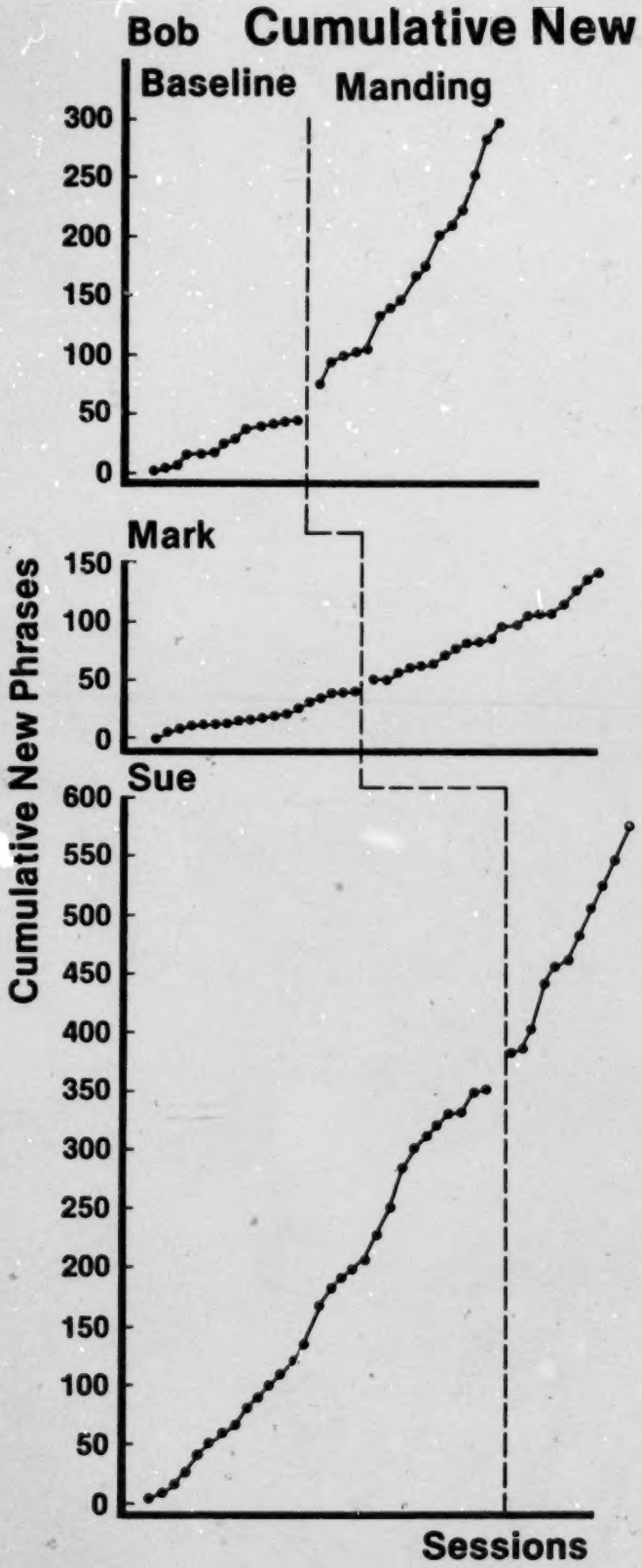
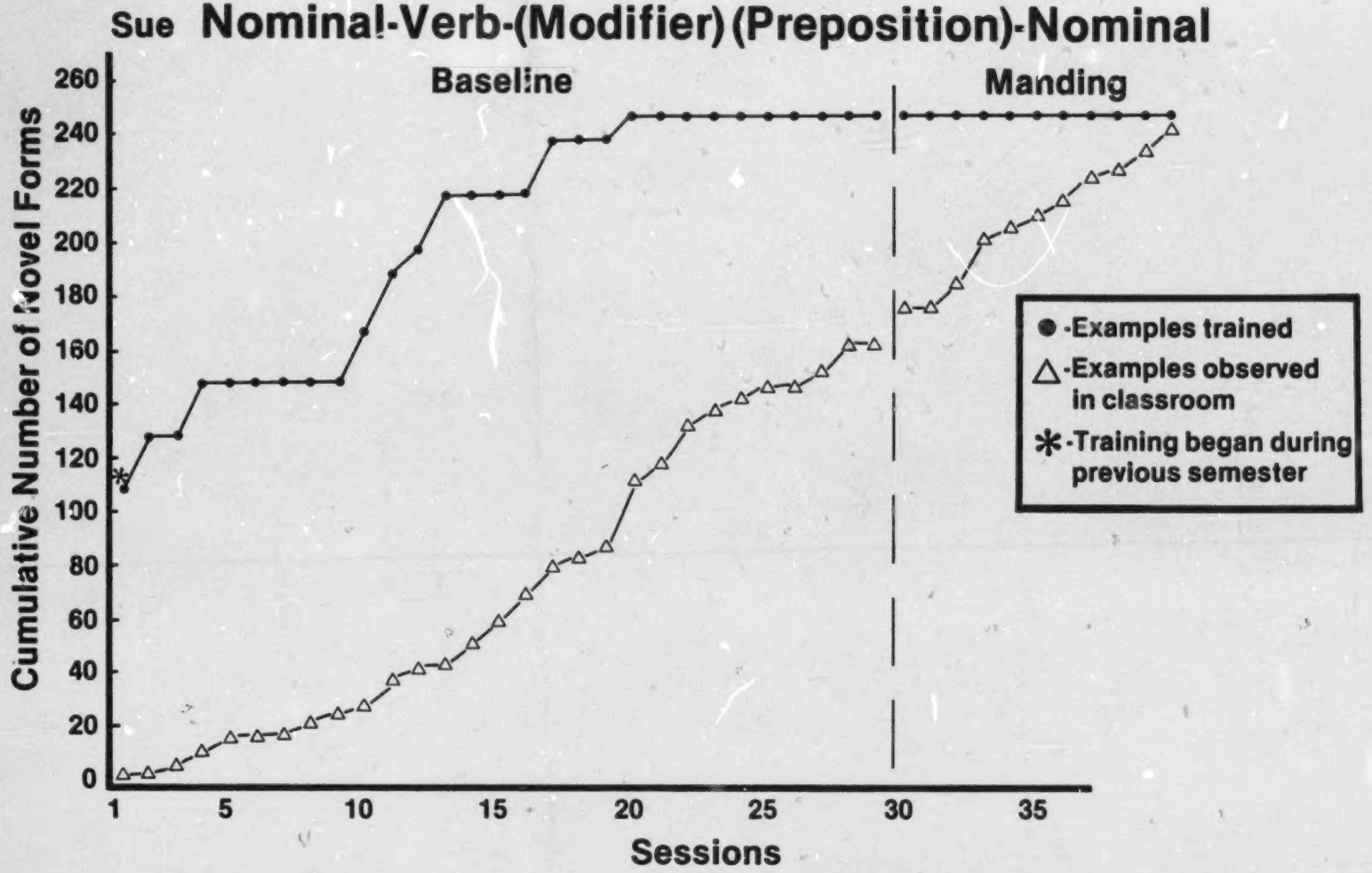
Hart, B., & Risley, T. R. Incidental teaching of language in the preschool. Journal of Applied Behavior Analysis, 1975, 8, 411-420.

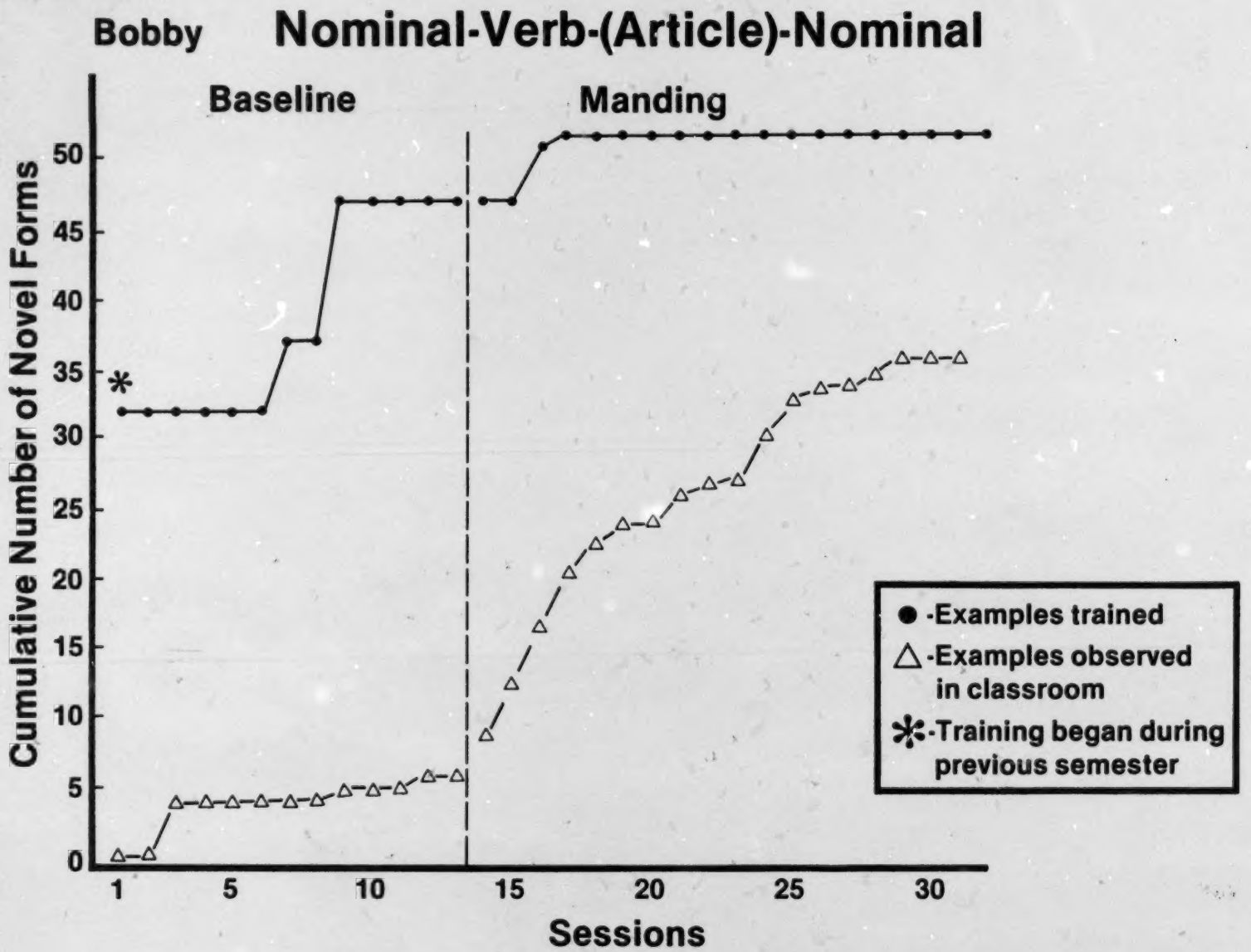
Schiefelbusch, R. L. Introduction. In R. L. Schiefelbusch & L. L. Lloyd (Eds.), Language perspectives: Acquisition, retardation and intervention. Baltimore: University Park Press, 1975.

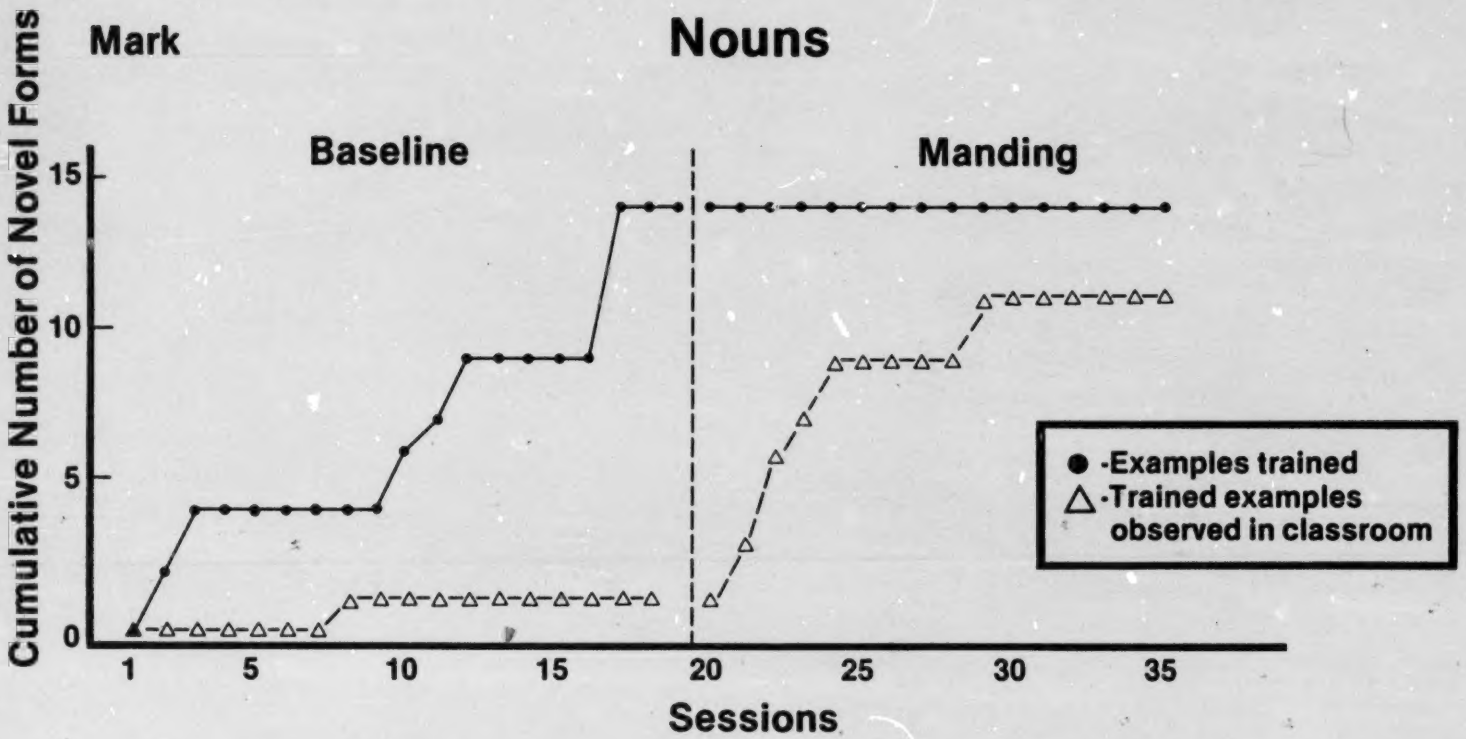

Bob
Total Child Verbalizations
Baseline
Manding
Mark
Sue
Number of Verbalizations
Sessions
0
10
20
30
40
50
60
70
1
5
10
15
20
25
30


Cumulative New Words
Bob
Baseline
Manding
300
200
100
0
Mark
300
200
100
0
Cumulative New Words
Sue
500
400
300
200
100
0
1
10
20
Sessions


Bob Cumulative New Phrases
Baseline
Manding
300
250
200
150
100
50
0
Mark
150
100
50
0
Sue
600
550
500
450
400
350
300
250
200
150
100
50
0
Cumulative New Phrases
Sessions


Sue Nominal-Verb-(Modifier)(Preposition)-Nominal
Baseline
Manding
Cumulative Number of Novel Forms
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1
5
10
15
20
25
30
35
Sessions
●-Examples trained
△-Examples observed in classroom
✱-Training began during previous semester


Bobby
Nominal-Verb-(Article)-Nominal
Baseline
Manding
Cumulative Number of Novel Forms
0
5
10
15
20
25
30
35
40
45
50
1
5
10
15
20
25
30
Sessions
*
● -Examples trained
△ -Examples observed in classroom
* -Training began during previous semester


Mark
Nouns
Baseline
Manding
Cumulative Number of Novel Forms
15
10
5
0
1
5
10
15
20
25
30
35
Sessions
● -Examples trained
△ -Trained examples observed in classroom